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(19) **United States**(12) **Patent Application Publication** (10) **Pub. No.: US 2021/0343445 A1**
(43) **Pub. Date:** **Nov. 4, 2021**(54) **POLYMER-SILICA HYBRID PDOTS AND METHODS OF USE THEREOF****Publication Classification**(71) Applicant: **University of Washington**, Seattle, WA (US)(72) Inventors: **Daniel T. CHIU**, Seattle, WA (US); **Jiangbo YU**, Bothell, WA (US); **Yu RONG**, Kenmore, WA (US); **Changfeng WU**, Changchun (CN)(73) Assignee: **University of Washington**, Seattle, WA (US)(21) Appl. No.: **17/368,078**(22) Filed: **Jul. 6, 2021**(51) **Int. Cl.****H01B 1/18** (2006.01)**C07K 14/00** (2006.01)**C07K 16/00** (2006.01)**C08K 3/36** (2006.01)**C08L 83/04** (2006.01)**G02F 1/015** (2006.01)(52) **U.S. Cl.**CPC **H01B 1/18** (2013.01); **C07K 14/00**(2013.01); **C07K 16/00** (2013.01); **C08L****2203/20** (2013.01); **C08L 83/04** (2013.01);**G02F 1/015** (2013.01); **C08K 2201/001**(2013.01); **C08K 3/36** (2013.01)**Related U.S. Application Data**

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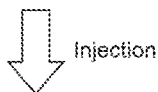
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(57)

ABSTRACT

The present disclosure provides organic-inorganic hybrid polymer particles, which have desirable surface chemistry and optical properties that make them particularly suitable for biological and optical applications. The present disclosure also provides methods of making organic-inorganic hybrid polymer particles. The present disclosure also provides methods of using the organic-inorganic hybrid polymer particles for biological and optical applications.

in THF solution: Polymer/alkyl-silane/silane(optional)
/silane with functional groups (optional)



Injection

Water/Aqueous Solution/ Silane with functional groups
soluble in water (optional)



Re-precipitation

Hybrid Pdots with functional groups

